

Health Study of Adolescents Enrolled in the Neighborhood Youth Corps

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ADOLESCENCE is one period of life thought to be comparatively free from major health problems. A pilot study of the health status of Santa Clara Neighborhood Youth Corps enrollees revealed, however, that many of these underprivileged youngsters did have significant health problems. Of 109 school dropouts surveyed by the San Jose City Health Department in May 1966, 11 percent had a significant hearing loss, 7 percent had a positive reaction to tuberculin tests, 35 percent had abnormal results in laboratory tests, and 18 percent were judged to have a mental health problem which warranted referral.

Because of the health problems which this survey had demonstrated, the present study was undertaken by the San Jose City Health Department between December 1966 and May 1967.

The primary objective of the study was to identify health problems and provide followup which would achieve necessary medical care. Secondary objectives were to provide health education and to assist Neighborhood Youth Corps administrators in dealing with enrollees who presented physical or mental health problems.

In addition, it was hoped that the study would answer some of the following questions. How would the health of these adolescents compare with the health of so-called privileged adolescents? How did the health of in-school enrollees

compare with those who had become school dropouts? Were health factors significant in causing adolescents to drop out? Did health defects among in-school enrollees influence their school performance? Would community services be adequate to meet the health needs identified by this program?

In order to answer the first question, the data from this study have been compared with those from a health study of 985 presumably normal high school students in Dormont, Pittsburgh (1). Because the Dormont study described students from white middle-class homes in an eastern suburb, and the study on the youth corps dealt with low-income western adolescents of mixed racial background, it was felt that this comparison would serve to demonstrate the needs of the underprivileged adolescent as opposed to the privileged adolescent of the middle class.

Population Studied

All adolescents in the program were between the ages of 16 and 21 and were enrollees in the Neighborhood Youth Corps. The youth corps is a work training program for underprivileged adolescents, which was established under title 1-B of the Economic Opportunity Act. All came from families whose incomes were classified by the Santa Clara Economic Commission as below the poverty level (maximum income, \$3,130 for a family of four). Approximately 90 percent were white and 10 percent Negro. Of those who were white, about two-thirds had

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Spanish surnames. There were 138 school dropouts in the program (54 boys and 84 girls) and 131 in-school enrollees (62 boys and 69 girls). The racial composition of those in school were similar to those who were dropouts.

General Description

Screening clinics were held at the health department, and approximately 16 enrollees were seen at each clinic. Enrollees were first welcomed to the clinic, and the purpose of the program was explained. They were then shown a film on venereal disease entitled, "A Quarter Million Teenagers." The film was followed by a discussion period during which questions were encouraged, and an attempt was made to help enrollees feel at ease about the anticipated examinations.

Specific screening procedures included a review of a health questionnaire, brief physical examination, check of blood pressure and pulse, vision and hearing tests, serologic test for syphilis, hematocrit value determination, serum cholesterol value, urine examination, skin tests for tuberculosis and histoplasmosis, dental inspection, and a mental health interview.

Following each clinic, the physician, project nurses, school nurse, youth corps counselors, and either the consulting psychologist or psychiatric social worker attended a medical review session. All data from the clinic sessions and from school health and academic records were considered at this time and the necessary followup was determined.

No funds had been allocated for followup; however, approximately 10 percent of the enrollees had insurance connected with their parents' work, and another one-third were eligible for Medi-Cal (title XIX). It was hoped that by using these and community resources, treatment could be provided for the majority of those needing it.

Procedures and Methods

Each enrollee completed a health questionnaire before seeing the physician. This questionnaire was then reviewed with the physician, and any health problems were discussed. At this time the enrollee was encouraged to ask questions about his health or other problems. Following this, physical examinations were given

school dropouts, but because of a limitation of funds, in-school enrollees did not receive an examination unless a need had been indicated by the questionnaire.

Physical examinations included observation of general appearance, nutritional status, posture, inspection of skin, head, face, neck, eyes, ears, nose, throat, extremities, auscultation of heart and lungs, examination of female breasts, and palpation of lymph nodes and abdomen. Genitalia were not examined. Blood pressure was taken by the nurse, who used the auscultatory method with the enrollee in an upright position.

Nutritional status was assessed by the physician and by a comparison of the enrollee's height and weight with height-weight-age tables (2). Using these tables as a guide, weights were classified as within normal limits, moderately overweight, markedly overweight, moderately underweight, and markedly underweight. The Wetzel grid (3) was used as an additional aid in assessing weight.

Visual acuity was measured by the Snellen test. A defect was considered significant if the visual acuity was 20/40 or less in at least one eye.

Hearing was tested by students from San Jose State College with a pure tone audiometer at 15-decibel intensity at frequencies of 500, 1,000, 2,000, 4,000, and 6,000 cycles per second. The test was failed if losses were shown at two or more frequencies below 4,000 cycles per second, or if there was a loss of 30 decibels or greater at any one frequency below 4,000 cycles per second in at least one ear.

Teeth were inspected by a dental hygienist using a mouth mirror, explorer, and optical illumination. The presence of decayed, missing, or filled teeth, malocclusion, poor oral hygiene, or chronic pain was recorded. Each enrollee was apprised of his oral condition as the inspection proceeded and oral hygiene was discussed.

Venous blood was obtained for examination by venipuncture. A serologic test for syphilis, Venereal Disease Research Laboratory (VDRL), was performed on all blood samples. Hematocrit values were determined by the microhematocrit method within 2 hours. Serum cholesterol values, using the AutoAnalyzer method, were also determined from the blood

samples as part of a larger study being conducted by the city health department.

The nurse told the enrollees how to collect a clean urine sample. The urine was tested for specific gravity, pH reaction, glucose, and protein. The criteria for abnormalities were the presence of glucose, protein or casts, any red blood cells or white blood cells in the boys, and more than 0 to 3 red blood cells or 5 to 10 white blood cells in the girls. Any abnormal test results on the urine were verified by a repeat examination before referral was made.

All enrollees except those known to have positive reactions to tuberculin were given five units (0.0001) of purified protein derivative intradermally and a histoplasmosis skin test.

Enrollees were interviewed by either a psychiatric social worker or a youth corps counselor for mental health problems. A mental health questionnaire was used to assist the interviewer. A few examples of the type of questions asked were, "Do you think you stand a chance of being as successful as you would like to be?" "What kinds of things do you worry about most?" and "What do you like about yourself?" The impression of the interviewer, together with that of the physician and project nurse, was presented at the medical review session, and recommendations for referral were then made with the help of the consulting psychologist.

Results

In all those procedures where a comparison of data was possible because of similar methods, observations have been presented separately for in-school enrollees, school dropouts, and students of Dormont High School.

Health questionnaire. All enrollees completed the questionnaire. The most frequently occurring current health complaints are presented in the following table.

<i>Present health complaints</i>	<i>Number</i>
Fatigue, extreme.....	3
Headaches, severe.....	3
Difficulty hearing.....	16
Difficulty seeing.....	50
Cough, chronic.....	4
Abdominal pain.....	5
Dysmenorrhea, severe.....	3
Pregnancy.....	4
Vaginal discharge, profuse.....	3
Epilepsy.....	4
Total.....	95

The health status of youth corps enrollees by past medical history is given in the following table.

<i>History of—</i>	<i>Number</i>
Automobile accident.....	60
Head injury.....	33
Epilepsy.....	1
Rheumatic fever.....	7
Kidney disease.....	5
Bladder infection.....	3
Stomach ulcer.....	3
Pregnancy, completed.....	19
Urethral discharge.....	6
Mental illness.....	5
Tuberculosis or record of positive tuberculin test.....	15
Total.....	157

Most of the head injuries were caused by an automobile accident. In all of the head injuries listed, the person had been unconscious for an hour or more. Of the four cases of epilepsy listed under present health complaints, three were attributed by the enrollee to a previous head injury.

In addition to the 19 pregnancies, four girls had had two pregnancies each, and four admitted having had an abortion (it was not determined if these were spontaneous). All the girls who had been pregnant were school dropouts. Most of them had not returned for postpartum examination, and only a few had been given information as to methods of birth control.

Illnesses among the families of the enrollees were as follows:

<i>Family illnesses—</i>	<i>Number</i>
Heart trouble.....	73
Diabetes.....	48
Cancer.....	21
Mental illness.....	16
Epilepsy.....	11
Tuberculosis.....	23
Total.....	192

Although the 269 enrollees listed 192 serious health problems within their families, this number is probably low because few families have regular medical care. Frequently, an enrollee knew a parent was not well, but did not know what was wrong.

Blood pressure and pulse. Four obese girls and one obese boy had systolic pressures between 140 and 170. No enrollee had a diastolic pressure above 90. No significant abnormalities were detected in pulse rate or rhythm.

Physical examination. Medical observations are classified as to body sites and systems in table 1.

Vision. Of the 269 enrollees screened, approximately 34 percent of the girls and 17 percent of the boys had significant uncorrected visual defects. Of these, more than 60 percent of the boys and 30 percent of the girls did not have glasses (table 2).

For those enrollees who had glasses, glasses failed to provide correction to 20/30 or better in both eyes for 36 percent of the girls and 57 percent of the boys. In comparison, only 14 percent of the girls in the Dormont study and 23 percent of the boys had glasses which did not correct adequately.

Hearing. Approximately 11 percent of youth corps enrollees had a significant hearing loss (table 3). An additional 13 percent of enrollees had minor losses, generally at high frequency, for which referrals were not made.

In testing Dormont students, losses were recorded at frequencies of 8,000 cycles per second. Yet even with the inclusion of this higher frequency, only 9.3 percent of the boys and 2.1 percent of the girls failed the test. A higher percentage of school dropouts failed the hearing test than did those in school. It was of interest that several who had a moderate hearing loss on testing had been unaware of it according to the health questionnaire.

Teeth. Enrollees were classified as essentially normal, needing routine care, and needing immediate care. Essentially normal included enrollees with moderately poor hygiene and one or two minor cavities. Those adolescents with two to four cavities of a moderate degree of severity were classified as needing routine care, and those with four or more cavities, abscessed teeth, chronic pain, or who were suspected of having Vincent's infection were classified as needing immediate care.

Results of the dental inspection follow.

Condition of teeth	Percent of 109 boys	Percent of 153 girls
Essentially normal.....	28.4	29.4
Needing routine care.....	19.3	22.9
Needing immediate care.....	52.3	47.7
Total.....	100.0	100.0

In contrast to approximately 70 percent of the Dormont students, only about 30 percent of

Table 1. Classification of physical examination abnormalities

Condition	School dropouts		In school ¹	
	N=54 boys	N=84 girls	N=29 boys	N=30 girls
Nutrition:				
Undernourished.....	3	0	2	2
Obese.....	11	27	8	13
Skin:				
Acne, severe.....	3	3	5	1
Generalized rash.....	2	0	0	1
Scarring, extensive.....	1	0	0	0
Tattoos, extensive.....	1	0	0	0
Scalp, alopecia areata.....	0	0	0	1
Face, congenital asymmetry.....	0	0	1	0
External eye:				
Blue sclerae (osteogenesis imperfecta).....	0	0	1	0
Pterygia.....	0	0	1	0
Granular conjunctivitis.....	1	0	0	1
Hordeolum.....	1	0	0	1
Tearing, chronic.....	0	1	0	0
Strabismus.....	2	0	0	1
Ears:				
Otitis media.....	2	0	0	0
Impacted wax.....	0	1	0	0
Nose, deviated septum (complete obstruction).....				
	0	0	1	0
Speech, nonspecific defects.....				
	5	0	0	0
Throat, tonsillitis.....				
	1	5	4	3
Neck, thyroid, enlarged.....				
	0	2	1	1
Heart, systolic murmur, probably organic.....				
	4	4	0	2
Lungs, increased breath sounds, rhonchi.....				
	2	1	0	0
Abdomen:				
Pregnancy.....	0	2	0	0
Tenderness.....	0	2	0	1
Extremities:				
Unequal leg length.....	1	0	2	0
Arthritis, elbow.....	0	1	0	0
Arthritis, fingers.....	0	0	0	1
Hand deformity.....	0	0	2	0
Abscess, toe.....	0	0	0	1
Tremor.....	0	0	0	1
Spine, kyphosis.....	0	1	0	1
Neurological system:				
Cerebral palsy.....	0	0	1	0
Minimum brain damage.....	0	0	1	0
Brain damage.....	2	0	0	0
Epilepsy.....	0	0	0	1

¹ Physical examinations when indicated by medical history questionnaire.

Table 2. Adolescents with defective vision and no glasses

Category and sex	Number with defective vision	Number without glasses	Percent without glasses
School dropouts:			
Male.....	8	5	62
Female.....	22	7	32
In school:			
Male.....	12	8	67
Female.....	31	12	39
Dormont study:			
Male.....	180	12	7
Female.....	244	6	2

the enrollees had teeth that were classified as essentially normal. Fifty percent of the enrollees needed immediate care. White blood cell counts of 10,000 to 12,000 were common among youngsters with rampant dental decay. Approximately 16 percent of the enrollees complained of chronic dental pain.

Two boys were being excused daily from class because of severe dental pain. One-fourth of the enrollees were judged to have moderate to severe malocclusion, the criteria for which was the absence of two or more contiguous teeth. For some enrollees, the cosmetic effect of malocclusion made it difficult to get employment.

Serologic test for syphilis (VDRL). Among the 269 enrollees there were no positive serologic results.

Hematocrit values. Many enrollees had low or borderline hematocrit values. Whereas in the Dormont study only 3 percent of female adolescents had hematocrit values of 40 percent or below, 91 percent of female school dropouts, and 88 percent of those in school had values below this. Only 0.6 percent of the boys in the Dormont study had a value of 42 percent or below, but 61 percent of male school dropouts and 57 percent of those in school had values below this (see chart).

Serum cholesterol. Results of test for cholesterol levels are given to add to information presently available on adolescent values. No referrals, however, were made on the basis of these observations. The mean serum cholesterol level was 165 mg. per 100 ml. for male enrollees and 171 mg. for female enrollees. Higher values were noted for school dropouts than for those in

school. The mean level for male dropouts was 178 mg., for female school dropouts, 186 mg. Boys and girls in school had values of 155 mg. each.

Seventeen percent of youth corps boys and 23 percent of the girls had cholesterol levels of more than 200 mg. It was noted that enrollees who were obese tended to have higher cholesterol levels than those who were not. Of the 55 obese enrollees, approximately 40 percent had cholesterol levels of 200 mg. per 100 ml. or above, whereas of the 185 non-obese adolescents, approximately 15 percent had levels of 200 mg. or above. Serum cholesterol levels for 254 enrollees follow.

Level per 100 milliliters	Number	Percent
Under 200 mg.....	202	80
200-225 mg.....	31	12
225-250 mg.....	15	6
More than 250 mg.....	6	2
Total.....	254	100

Urine. A total of 48 or approximately 18 percent of the enrollees had abnormal results for urine tests. Of these, 22 percent were among school dropouts and 13 percent were among those in school. On repeat urinalysis, three boys and three girls were found to have sugar in their urine, 14 boys and 31 girls had protein, red blood cells, white blood cells or casts, two boys and 10 girls were found to have bacteria, and five girls had a *Trichomonas* infection. One case of gonorrhoea in a male school dropout was identified on a routine urine examination. No comparisons were possible with the Dormont study because urinary examination was not included in the Dormont screening.

Skin tests. A total of 9.8 percent of enrollees were either known to react positively to tuber-

Table 3. Percent failing audiometric testing, by sex

Category	Percent failing
School dropouts:	
54 males.....	20.4
84 females.....	9.5
In school:	
62 males.....	12.9
65 females.....	4.6
Dormont study:	
410 males.....	9.3
431 females.....	2.1

culin or were identified as such during the screening program (table 5). Ten previously unknown positive reactors were identified during the screening. Two enrollees had active tuberculosis. One was a school dropout who was identified by the screening program. The other was an in-school enrollee who was a known positive reactor, but who had failed to take previously recommended medication. Two other persons living in her home were subsequently identified as having active tuberculosis. Enrollees having positive reactions to tuberculin were as follows:

Category	Total tested	Positive	
		Number	Percent
Dropouts-----	135	11	8.1
In school-----	131	15	11.5
Dormont study----	1,181	38	3.3

In contrast to these discoveries, 3.3 percent of the Dormont students had positive tuberculin reactions. Followup of these students revealed no active tuberculosis.

Seven enrollees had a positive reaction to histoplasmin, but X-ray examinations of these enrollees were either negative or showed that the infection had healed.

Nutritional status. In-school enrollees, school dropouts, and Dormont students have been categorized as to weight in table 4. Enrollees considered to be markedly overweight were also observed to fall in or above channel A4 on the Wetzel grid (3).

In the Dormont study 75 percent of adoles-

cents were considered to be within normal weight limits, but only 50 percent of youth corps enrollees were considered within normal limits. Obesity was the major weight problem. In contrast to approximately 10 percent of Dormont girls and 5 percent of Dormont boys, in the youth corps 26 percent of the girls and 16 percent of the boys were classified as obese.

The many intriguing questions which arise as to the increased occurrence of obesity in these youngsters is beyond the scope of this paper. Certain correlations of data were noted, however, and are presented as follows.

DIABETES IN FAMILY. A record of diabetes in a family was determined solely from the medical history questionnaire. Because few of these families were knowledgeable as to specific illnesses, it is probable that this number is low. About 30 percent of those adolescents who were obese, however, had reported diabetes in the family, whereas only 12 percent of those who were not obese reported diabetes (table 5). Further studies investigating the correlation of adolescent obesity and diabetes in the family seem warranted on the basis of these data.

ANEMIA. Obese enrollees did not demonstrate a greater percentage of low or borderline hematocrit values than did the non-obese.

DEPRESSION. To determine if periods of depression were more frequent among those adolescents who were obese than among those who were not, a comparison was made of replies to the question, "How often have you felt unhappy for a period of 3 days or longer?" No difference

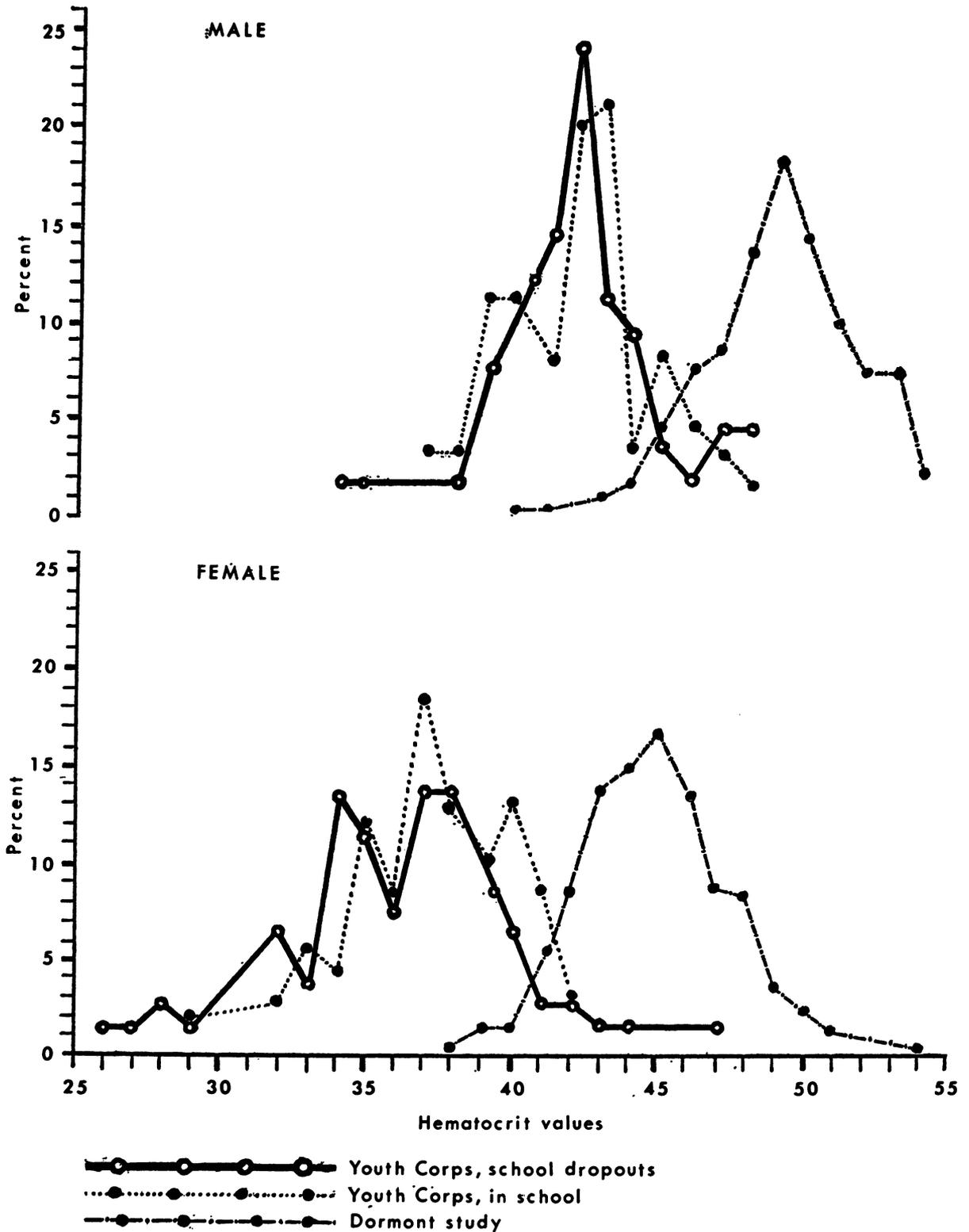
Table 4. Nutritional status of Neighborhood Youth Corps enrollees and Dormont students, in percent

Category	Number	Within normal limits	Moderately overweight	Markedly overweight	Moderately underweight	Markedly underweight
Dormont study:						
Males-----	488	86.7	5.5	5.2	2.1	0.4
Females-----	497	77.3	7.5	10.3	3.0	1.9
School dropouts:						
Males-----	54	51.9	20.4	20.4	7.4	0
Females-----	84	46.4	8.3	32.1	11.9	1.2
In school:						
Males-----	62	53.2	24.2	12.9	9.7	0
Females-----	69	56.5	14.5	15.9	13.0	0

NOTE: Definitions given in reference 3. Moderately overweight, between 10 and 20 percent more than average weight; markedly overweight, 20 percent or more

above normal; moderately underweight, between 10 and 20 percent below normal; markedly underweight, 20 percent or more below normal.

Hematocrit values of male and female Neighborhood Youth Corps enrollees and high school students in Dormont, Pittsburgh



was noted—40 percent of the obese adolescents and 40 percent of non-obese adolescents indicated that they had frequent periods of unhappiness which lasted 3 days or longer.

Mental health. Almost all enrollees came from families with multiple problems. It was anticipated, therefore, that serious emotional problems would be far greater than for adolescents generally. Few statistics are available as to the frequency of emotional disturbances in adolescence; however, an estimated 10 percent of the adolescents in boarding school and college have mild and transient emotional disturbances (4a). Of this 10 percent, it is thought that a much smaller undetermined number will develop emotional difficulties serious enough to warrant a psychiatrist's care. In contrast to these estimates, 34 percent of the enrollees had emotional problems serious enough to warrant professional help, and many others had milder emotional problems which were referred to counselors, teachers, or school nurses. Among enrollees who were felt to need professional help, 45 were referred for group therapy and 13 for individual psychiatric care.

Indicative of the importance of adolescent mental health is the fact that suicide ranks as the fourth major cause of death for this age group. In the United States in 1955 the suicide rate for boys between 14 and 19 years of age was 3.9 per 100,000; for girls, 1.3 per 100,000 (4b). In the present study, three of the 269 enrollees had made a suicide attempt in the past, and two others made suicide attempts during the program.

Followup and Referral Completion

Referrals and followup were determined at the medical review sessions. Many hours were spent by the staff in achieving referral completion. It was estimated that a minimum of 143 home visits, 335 telephone calls to enrollees, and 41 telephone calls to physicians were made. In addition, numerous conferences were held with Neighborhood Youth Corps counselors and school nurses.

Referrals were made to physicians and dentists in private practice, Santa Clara Valley Medical Center (county hospital), Santa Clara County mental health and dental clinics, Crip-

Table 5. Record of diabetes in families of 138 school dropouts and 131 enrollees in school

Classification	Diabetes in family		No history of diabetes in family	
	Number	Percent	Number	Percent
In school:				
Obese.....	6	31.6	13	68.4
Non-obese.....	13	11.6	99	88.4
School dropouts:				
Obese.....	11	30.6	25	69.4
Non-obese.....	14	13.7	88	86.3
Total:				
Obese.....	17	30.9	38	69.1
Non-obese.....	27	12.6	187	87.4

pled Children's Services, Alcoholics Anonymous, and Alateen. Other organizations included adult and child guidance clinic, the day care center associated with the San Jose Community Mental Health Center, and the Family Service Association of Santa Clara County. Because of time and financial limitations, it was necessary to consider followup complete when the initial visit for care had been made.

The success of followup varied considerably with the type of health problem. For conditions identified by the physician through the medical history questionnaire or on physical examination, referral completion was about 70 percent. Of the 27 enrollees referred for hearing loss, 22 completed medical referral, but of the 47 enrollees with defective vision, only eight had obtained glasses by the end of the program.

Dental referrals were a major problem. For many enrollees the cost of dental care was prohibitive. Those enrollees who had Medi-Cal were encouraged to use it to receive care. A few enrollees received care that was paid for by school funds, and for some, arrangements were made for free treatment by dentists in private practice. For the great majority of these adolescents, however, no resources were available.

Fifteen of 30 enrollees referred for low hematocrit values completed referral. Of 48 referrals for urinary abnormalities, 30 completed an initial visit to a physician, four were seen at the Diabetes and Glaucoma Screening Clinic, and two were referred to the county public health nurse for subsequent followup. All enrollees

with newly positive tuberculin skin tests, or enrollees who had had previous positive reactions and who had allowed care to lapse, completed referral to the county hospital. After completion of the health study, followup was continued for them by the district public health nurse.

Recommendations for mental health referrals were made with the help of the consulting psychologist and psychiatric social worker. There were three classifications for referrals: first for enrollees who had what were considered minor emotional problems, second for applicants for group therapy, and third for those who needed individual psychiatric care.

Under the first classification, many referrals were made to youth corps counselors and the school nurses. Counselors could often arrange job changes for an enrollee, or keep an enrollee on the program longer because of a mental health problem. The school nurse was in an excellent position to carry out referrals as she could contact students directly and could consult with a teacher or make a home visit when necessary.

Under the second classification, 45 enrollees were referred for group therapy. Nine school dropouts were referred to therapy sessions which met near their area of work at Gilroy and Mountain View, and 23 in-school enrollees were referred to a group therapy session at the San Jose Community Mental Health Center. Since, at the beginning of the screening program, no local group existed as a referral source, an effort was made to establish a group financed from MediCal (title XIX).

Group therapy was conducted at the city health department by a psychiatrist, Dr. Theodore J. Sabot, who was particularly interested in group therapy for adolescents. The following comments are from a report evaluating the group's progress after 3 months.

The group enthusiasm has been most impressive, with a core of about five members who have attended regularly and have created a sense of cohesion. The group has developed a spirit of its own with an increasing sense of responsibility and autonomy. Some evidence of the group's impact on the members is as follows. One overly shy youngster has become an active group member and an informal leader. One who had been very aggressive is able to talk and delay action with less evidence of aggressive preoccupations. One with "psy-

chogenic fits" has had none since entering the group, and one who had shown evidence of depression and suicidal thoughts has become actively involved in the group with a lessening of depression and withdrawal.

Of those judged to need individual psychiatric care, 13 enrollees were referred to the adult and child guidance center, and six were referred to the Santa Clara County Mental Health Clinic. Only four of these referrals were completed.

When enrollees had the responsibility of making their own appointments and providing their own transportation, completion of mental health referrals was poor. To achieve successful followup, care should include contact with the enrollee's family, and it may often have to include making the referral appointment, providing transportation, and even accompanying the youngster on his initial visit.

Comments

Certain health problems warrant comment based on the frequency of occurrence. Two of the most prevalent were anemia and obesity.

The frequency of borderline anemia among enrollees is not surprising when it is realized that many enrollees eat meat only once a week. Undoubtedly this was related to complaints of chronic fatigue: "I'm tired all the time." "I feel too tired to do anything but sit and watch TV when I get home." "I'm too tired to go to school in the morning." Certainly a marked change was observed in the well-being, appearance, and even attitude of enrollees who were given supplemental iron.

In contrast to obesity, anemia is a health problem which is easily, inexpensively, and often effectively treated. Hematocrit value determinations alone would have substantial merit as a screening procedure. A program which identified anemia and provided supplemental iron might be very effective in improving the health and possibly even the school performance of underprivileged youngsters.

The high proportion of obesity among youth corps enrollees corresponds to the observation by Goldblatt and co-workers (5) that obesity is correlated in an inverse way with socioeconomic level. Many enrollees who were obese had been so since infancy. Frequently they expressed both guilt and hopelessness about being fat.

A family history of diabetes was recorded far more frequently among enrollees who were obese than among those who were not. A similar correlation was not observed, however, between enrollees who were anemic and those who were obese. Of significance in this regard is a study by Seltzer and Mayer (8) which showed that obese adolescents with normal hematocrit values have considerably lower mean serum iron values than have non-obese adolescents. In future screening programs, determination of serum iron levels as well as hematocrit values would be of great interest, particularly for underprivileged adolescents who might be anticipated to have a latent iron deficiency.

Head injuries were frequent enough to warrant comment. Twelve percent of enrollees had had an injury which had caused them to be unconscious for 1 hour or longer, and the injury had left many with a residual health problem. Many of these injuries had been caused by an automobile accident.

It was not realized until the study was well under way that, for many of these families, parental alcoholism was also a major problem. These are families, often with many children, who frequently need the help of several community agencies.

Discussion

How did the health of youth corps adolescents compare with that of middle class adolescents of Dormont? Screening procedures data that could be compared were vision and hearing tests, hematocrit value determinations, tuberculin tests, and nutritional and dental evaluations. In all these procedures, the health of youth corps enrollees was significantly below that of Dormont students. Examination of adolescents in the Dormont study did not reveal serious disease; however, youth corps enrollees had illnesses that included tuberculosis, kidney disease, venereal disease, arthritis, serious mental disturbances, and extensive dental caries.

A second question asked in this study was, "How did the health of in-school enrollees compare with those who had become school dropouts?" A greater percent of school dropouts were obese, had significant hearing and visual defects, and were anemic than were those in

school. Urinary abnormalities were more frequent among school dropouts. Pregnancy and abortions were acknowledged only by school dropouts.

Discoveries on several physical examinations related directly to a person's becoming a dropout. One boy had refused to go to school because of an extensive skin rash. One girl volunteered that she had dropped out of school because her obesity embarrassed her. A boy with a severe speech defect had left school because of this. Two girls had dropped out because of pregnancy. The health, therefore, of the school dropout was definitely below that of the in-school enrollee, and in several adolescents a health problem had been the primary cause for dropping out.

Not only were some health defects directly responsible for youngsters becoming dropouts, but many defects among in-school enrollees directly influenced their school attendance and performance. If they had not yet caused the person to drop out, they were certainly contributing to academic failure.

A few examples of such health problems follow. One boy was found to be in a constant state of lethargy from medication for epilepsy which had been prescribed 6 years previously. On referral to a physician, the medication was stopped and his school performance had improved noticeably by the end of the program.

Another boy, who had been in a class for the mentally retarded since the second grade, was referred to the Northern California Diagnostic School for Neurologically Handicapped Children for reevaluation. Studies there revealed that he had normal intelligence but suffered from a minimal cerebral dysfunction with an emotional overlay. His classification in school was subsequently changed and efforts were made to assist him in achieving skill in a trade commensurate with his ability.

Community services were not adequate to provide care for many of the health problems identified. It is apparent that facilities for treatment must be available if the health needs of these youngsters are to be met. Facilities alone, however, will not insure that medical care will be received. Among additional factors to be considered are (a) will the adolescent be

motivated enough to use facilities that are offered? (b) what are obstacles that keep adolescents from using facilities? and (c) will the care given be meaningful?

To be motivated to seek health care, adolescents have to realize its importance. For underprivileged youngsters whose homes frequently do not provide this education, it is necessary for schools or health programs to take the initiative in educating them as to the importance of health care and the part it plays in the prevention of disease. Youth corps enrollees, like most adolescents, are very aware of their health and their appearance. Almost without exception they were eager for help and appreciative when interest was shown in them. They were, however, primarily worried about relatively minor health problems such as acne, dizziness on rising, and occasional stomach aches. Often, because of ignorance, serious health problems were unrecognized. Chronic cough, constant fatigue, night sweats, and burning when urinating might well be dismissed by them as unimportant conditions which most people have at one time or another.

One of the greatest obstacles that kept enrollees from achieving care was their own timidity or actual fear. The thought of having to undress, especially among Mexican-Americans who have a very strong sense of modesty, was enough to discourage them from seeking medical care unless the condition was severe. Several enrollees were genuinely fearful of having skin or blood tests.

Transportation was also a major obstacle. Most enrollees chose to go to the county hospital for treatment even though they had Medi-Cal and could have chosen a private physician. The hospital was a long way from the east side where most of these youngsters lived, and therefore transportation provided a real problem. Similarly, transportation was the main obstacle to the group therapy session held at the health department. Occasionally, such a major effort was needed in getting to a place for care that this effort seemed of greater inconvenience than the health problem, particularly if the importance of care was not understood.

Care that is given must be meaningful. It accomplishes little to tell an anemic youngster

that he should eat more meat if there is no money to buy meat, or to provide glasses for enrollees who will not wear them. Several boys in the study, for example, would wear only dark glasses since these were socially acceptable and regular glasses were not.

Several of these obstacles could be overcome by using neighborhood centers for the health program. Transportation difficulties would thus be lessened, and familiar surroundings would help to diminish feelings of timidity and fear. Every effort should be made to create a relaxed, nonclinical atmosphere. Care could be made more meaningful if special training as to ethnic customs were given to the staff or if at least some of the staff were of similar cultural background.

Summary

A study of the health of 269 Neighborhood Youth Corps adolescents was made by the San Jose City Health Department between December 1966 and May 1967. The primary objective of the study was to identify health problems and provide followup which would achieve medical care as well as to evaluate the need for future health programs for these youngsters.

Screening procedures consisted of a review of a medical history questionnaire, brief physical examination (school dropouts routinely and enrollees in school only as indicated), check of blood pressure and pulse, vision and hearing tests, dental inspection, blood and urine tests, tuberculin and histoplasmosis skin tests, and mental health interview.

The data from in-school enrollees were compared with that of school dropouts and, whenever possible, screening results were also compared with those from a health study of middle class high school students in Dormont, Pittsburgh.

Screening procedures revealed that among youth corps enrollees 34 percent of the girls and 17 percent of the boys had a significant uncorrected visual defect, 8 percent of the girls and 16 percent of the boys had a significant hearing loss, 50 percent of enrollees needed immediate dental care, 13 percent were anemic, 18 percent had abnormal results for urine tests, approximately 10 percent had positive tuberculin skin tests, and 34 percent had emotional problems

serious enough to warrant professional help. Observations during physical examinations identified 91 conditions among the 131 school dropouts which warranted medical attention. Among in-school enrollees, who were examined only when indicated by answers to the medical history questionnaire, 53 medical referrals were made.

For those procedures for which it was possible to compare results—vision and hearing tests, dental inspection, hematocrit determination, tuberculin skin test, and nutritional evaluation—the health of youth corps enrollees was significantly below that of Dormont students. Examination of adolescents in the Dormont study did not reveal serious disease; however, many youth corps enrollees had serious health problems.

School dropouts had a greater percentage of obesity, significant hearing and visual defects, urinary abnormalities, and anemia than did those in school. In some instances a health problem had been a primary factor in causing a youngster to become a dropout, and among in-school enrollees several health conditions were identified which directly affected academic performance.

Community services were found not adequate to meet the health needs demonstrated by this study. If the goal of improving the health of these young people is to be achieved, a health program must do more than merely screen for health abnormalities; it must also provide services for treatment which are both acceptable and readily available to those who need them.

REFERENCES

- (1) Rogers, K. D., and Reese, G.: Health studies—presumably normal high school students. I. *Amer J Dis Child* 108: 572-600, January 1965.
- (2) Association of Life Insurance Directors and Actuarial Society of America, as cited in *Diseases of metabolism*, edited by G. G. Duncan. W. B. Saunders Co., Philadelphia, 1964, pp. 974-975.
- (3) Wetzel, N. C.: Physical fitness in terms of physique, development and basal metabolism. *JAMA* 116: 1187-1195, Mar. 22, 1941.
- (4) Gallagher, J. R.: *Medical care of the adolescent*. Appleton-Century-Crofts, Inc., New York, 1960. (a) p. 348; (b) p. 345.
- (5) Goldblatt, P. B., Moore, M. E., and Stunkard, A.: Social factors in obesity. *JAMA* 192: 1039-1044, June 21, 1965.
- (6) Wenzel, B. J., Stults, H. B., and Mayer, J.: Hypoferraemia in obese adolescents. *Lancet* No. 7251: 327-328, Aug. 18, 1962.

Contract for Health Data Collection Awarded to U.S. Conference of Mayors

A \$175,325 contract with the U.S. Conference of Mayors to assist city and county health departments to increase their involvement in the implementation of Model Cities Programs has been awarded by the Community Health Service, Health Services and Mental Health Administration. The contract calls for the collection and dissemination of data which will help health officials make maximum use of programs to improve the health of people in their cities.

The Conference of Mayors will conduct a survey to determine current and planned participation of health authorities in all 153 model neighborhood programs, identify barriers to more effective participation, and provide information on how these and other obstacles may be overcome. In addition, nine model cities will be selected to receive in-depth consultation and assistance in a concerted effort to stimulate their local health departments toward maximum participation in the Model Cities Program.

Dr. Joseph T. English, Administrator of the Health Services and Mental Health Administration, in announcing the contract, pointed out that the U.S. Conference of Mayors is the ideal organization to undertake this contract, since it is the only formal organization representing the mayors' offices of all model cities—offices which in conjunction with elected governing boards have local responsibility for the program.